

NOTES AND TABULATION OF THE AUSTRALIAN AMARYGMINÆ (FAMILY TENEBRIONIDÆ), WITH DESCRIPTIONS OF NEW SPECIES.

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In 1892-3 Mr. Blackburn published his revision of this group, and rendered a notable service to our knowledge of this numerous and little-known sub-family, by giving an elaborate tabulation thereof. Since that date Mr. Blackburn has himself described several species, Herr Gebien has described seven, and the author now proposes to add twenty-two more. Further, a good deal of information has been available to the author, especially in access to the Macleay types and a visit to the Hope Museum at Oxford in 1907, so that it is now possible to correct some of the unavoidable inaccuracies made in the revision referred to above, while it is hoped that future workers will find some assistance in the present notes and tables towards a more complete accuracy. Mr. Blackburn's table is sometimes obscured by the use of characters inconsistent with his descriptions, *e.g.*, *C. inconspicuus* is placed amongst species "with ocular sulcus," whereas in the description he says "sulcis ocularibus nullis." Again with *C. longiusculus* his table says "interstices convex and impunctulate," whereas in the description he says "interstitiis rotundo-elevatis sparsim subtilissime elevatis" (*sic*); the last word being presumably a misprint for "punctatis."

In the tabulation given below, the author has differed materially from Mr. Blackburn's system—(1) In attempting what is hoped will prove a simpler scheme for identification of species: (2) in paying less regard to the "ocular sulcus" as a character that is clearly defined in but few species: (3) in paying more consideration to colour—especially of the pronotum; with one or two specified exceptions in the species having a black pronotum that character is constant, and therefore forms a convenient character for division in a large genus; where, however, the "ocular sulcus" is well defined it has been also utilized: (4) the ratio of length to breadth is a generally constant character, and serves admirably for tabulation; some hundreds of measurements have been made to prove this, and the author would suggest the term "*rational index*" to denote this ratio.

Mr. Blackburn's corroboration of Blessig's separation of *Amarygmus* from *Chalcopterus* is amply confirmed by the

author's dissection of a large number of specimens, which show that in all cases examined the species recognized by Blackburn as *Amarygmus* have bifid mandibles, while in *Chalcopterus* the apex of the mandibles is evenly truncate. The statement that "there are few specimens in which the mandibles are so hidden that there is the least difficulty in discerning their form" is only true in the larger species, or in the smaller ones if the mandibles happen to be widely extended. Otherwise it is generally necessary to dissect the head, or at least to extend the mandibles, after relaxing the specimen. The author's determination of species has been greatly facilitated by the valuable help given by the late Rev. Canon Blackburn in the loan and gift of co-types, the determination of others, as also by that learned entomologist's valuable memoirs on the subject. An immense number of specimens have been examined, including the valuable collections in the following museums:—Macleay and Australian Museums, Sydney; National Museum, Melbourne; the South Australian Museum, Adelaide; Queensland Museum, Brisbane; the Musée d' Histoire Naturelle, Brussels; the four first of which contain many types or co-types named by Blackburn himself. The author would take this opportunity to thank for the courtesy the late Mr. G. Masters, Mr. Rainbow, F.E.S., Mr. J. A. Kershaw, Mr. A. M. Lea, F.E.S., Dr. Hamlyn-Harris, D.Sc., for their help, and especially Mr. Lea and Mr. C. French, the former for the loan of his fine collection and the gift of many duplicates and the latter for the gift of many new and rare species, as also Mr. H. Griffith, of Adelaide, Mr. A. Giles, F.E.S., of Perth, and Dr. E. W. Ferguson, of Sydney, for much assistance. Lastly, I am indebted to the courtesy of Mr. C. O. Waterhouse for comparing specimens sent to the British Museum with types and for his valuable notes thereon.

Since writing the above, I have had the very valuable co-operation of Mr. K. G. Blair, of the British Museum, who has been able to examine and compare the respective types of Fabricius, Hope, Pascoe, and Blackburn, and who has been good enough to send me copious notes on the species examined. Further, and more valuable still, the authorities of the British Museum have permitted Mr. Blair to send me a large number of specimens, including many that have been compared with these types, so that it is now possible to clear almost the whole group from the clouds of uncertainty. My very cordial thanks are due for the courtesy of the British Museum authorities, and especially to Mr. Blair for this timely assistance and for his permission to use his notes.

## CHALCOPTERUS, NOTES ON DESCRIBED SPECIES OF.

*C. puncticollis*, Hope. Specimens from South Perth were compared with type by Commander J. J. Walker, R.N., M.A., who writes that they are identical. Below is given a description taken from a specimen compared with the type.

*C. opacicollis*, Macl. In the Australian Museum are the Gayndah types, though, as was the unfortunate custom with Sir W. Macleay, they are not specially marked as types. Under the label *C. opacicollis*, Macl., are two specimens which are *two different species*. Denoting these by A and B respectively, A has the prothorax purple and blue (the former predominant), the elytra variegated, suture golden, then purple, green, and again golden-metallic at the sides, the seriate punctures are larger than in B, with the intervals distinctly punctate, and tarsal vestiture black. In B the prothorax is metallic-black, the elytra blue, with purple at the suture and golden-green at the sides, the seriate punctures smaller than in A and subelongate, the intervals scarcely perceptibly punctate, while the tarsal vestiture is red. A is the species considered by Blackburn as *C. opacicollis*. It is one of the commonest species in South Queensland and Northern New South Wales, and is probably *C. vinosus*, Pasc., and *C. resplendens*, Boisd. B is the species described by Blackburn as *C. hunterensis*. From Macleay's description the words "Thorax brassy-black, opaque, and minutely punctate," "Elytra . . . of a purplish colour, becoming green towards the sides . . . eight rows of small, closely-placed, subelongate punctures" clearly point to B as the type described, since the seriate punctures in A are not at all elongate, and the thorax is not at all black.

*C. grandis*, Macl. In Blackburn's table, this is placed under the group with "tarsal vestiture black." The type specimen has the tarsal vestiture *yellow*.

*C. obsoletus*, Macl. = *C. fastuosus*, Germ. There are some slight colour distinctions, and the Queensland specimen is rather larger than specimens (identified as *C. fastuosus* by Blackburn) from South Australia. *Confluens*, Blkb., is the same species, the distinction drawn by its author is, I think, only individual variety.

*C. rufipes*, Macl. The type specimen has the pronotum distinctly dark-blue (described as having "thorax black"). It is of a much darker shade than that of the elytra. The tarsi are black above, clothed with reddish hair. Specimens from Cunnamulla, given me by Mr. Lea, are identical. A specimen compared with type of *nigritarsis*, Pasc., proves its synonymy with that species.

*C. picipes*, Macl. There are two specimens under the label, but evidently the same species. The elytra are green, with larger seriate punctures than in *C. rufipes*, the tarsi are piceous above, clothed below with pale-red or yellow hair. I have specimens taken near Brisbane by myself, others from Narromine (N.S.W.) taken by Mr. Sloane, that correspond exactly with Macleay's type, and also with the description of *C. jucundus*, Blkb. I cannot agree with Mr. Skuse's opinion given in the note by Blackburn (Proc. Linn. Soc., New South Wales, 1893, p. 87) as to the identity of *C. picipes*, Macl., and *C. rufipes*, Macl. The prothorax varies in colour from blue-black to green. Of a specimen of *picipes*, Macl., sent to Mr. Blair he writes: "Type (of *jucundus*, Blkb.) is larger and stouter, but agrees with this specimen in puncturation and in more nitid surface than in 'nigritarsis.'"

*C. imperialis*, Blkb. The tarsi are nigro-setose, with a few reddish hairs interspersed. Mr. Blackburn placed it amongst those with flavo-setose tarsi in his tabulation. My specimens are from Marmor, Queensland, given me by Mr. H. Brown.

*C. variabilis*, Bless., and *C. sulcipennis*, Hope, were omitted by Gebien in the new catalogue of Junk (Berlin). The former is a very common species in New South Wales, Victoria, and Tasmania. The latter is identical with *C. suturalis*, Pasc. (*vide infra*).

*C. setosus*, Blkb., is not very appropriately named, since the setæ are extremely fine, especially on the upper-surface. In the *co-type* lent me by Mr. Blackburn, the setæ could be seen only on the epipleuræ, in other specimens they are visible (with a lens) on the elytra. It is a large, very robust species, brightly metallic-green, with large punctures of a much darker colour—generally blue—but I have one specimen in which these punctures are purple. *C. nobilis*, Blkb., of which I have seen a *co-type* in the Melbourne Museum, is much more evidently setose, though the fact is not mentioned in the description. There is also a mistake as to locality in the case of *setosus*. This is given as Victoria in the description. All the specimens I have seen (and they are many) have come from Cairns or other parts of North Queensland; Mr. Blackburn's *co-type* was labelled Thursday Island. *C. nobilis*, Blkb., has much larger punctures in the elytral series, and much finer (scarcely evident) punctures on the pronotum; otherwise the two species are very similar.

*C. perlongus*, Blkb. In description the elytra are said to be "sat seriatim punctulatis, interstitiis planis." A

co-type given me by Mr. Blackburn has the elytra substriate, with distinctly convex intervals.

*C. amethystinus*, Fab. Mr. Blair says that the type in the Banks collection has black femora, but other specimens labelled by Hope have red legs; but this may be the effect of age. Certainly a specimen sent with a label "Pasc. coll." is ticketed "*amethystinus*, Fab.," while another very ancient specimen bears an old label "*Erotylus amethystinus*, Fab.," and both of these agree with specimens identified by myself from North Queensland as *amethystinus*, Fab., and is the same species Blackburn considered as Fabricius' species. It has red femora, but darker tibiae, and a blue pronotum. On the other hand, the specimen sent by Mr. Blair as agreeing "very nearly with the type" has a black pronotum, and is evidently *C. lævicollis*, Bless. = *cælestis*, Pasc. = *cyanipennis*, Hope, which is quite inconsistent with Fabricius' scanty description. There is also a difficulty as to the tarsal clothing. Blackburn places it amongst those with black tarsal vestiture. I find, in examining many specimens, that, like *C. imperialis*, Blkb., it has both *red* and *black* setæ on its tarsi, the front and intermediate being generally rufo-setose, while the posterior tarsi are nigro-setose. I find I have placed it amongst the "flavo-setose" group in my tabulation. If placed under the "nigro-setose" it would stand next to *michaelseni*, Geb., from which it is easily separated by its almost impunctate elytral intervals.

#### SYNONYMY.

1. *C. vigilans*, Blkb. = *C. semiticus*, Pasc. = *C. triangularis*, Haag. = *C. cupricollis*, Hope = *C. smaragdulus*, Fab.
2. *C. cupripennis*, Germ. (*nec* Hope) = *C. simius*, Blkb. (var.) = *C. howitti*, Pasc. = *C. affinis*, Bless. = *C. columbinus*, Boisd. (?)
3. *C. laticollis*, Blkb. = *C. colossus*, Blkb. (var.).
4. *C. confluens*, Blkb. = *C. obsoletus*, Macl. = *C. fastuosus*, Germ.
5. *C. venereus*, Gmel. = *C. cupreus*, Fab.
6. *C. froggatti*, Blkb. = (?) *C. semiseriatus*, Blkb. (var.) = *C. cupripennis*, Hope.
7. *C. hunterensis*, Blkb. = *C. opacicollis*, Macl.
8. *C. blackburni*, Geb. = *C. interioris*, Blkb.
9. *C. bicolor*, Geb. = *C. viridicollis*, W. S. Macl.
10. *C. arthuri*, Blkb. = *C. intermedius*, Blkb.
11. *C. meyricki*, Blkb. = *C. iridiventris*, Blkb. (var.).
12. *C. jucundus*, Blkb. = *C. picipes*, Macl.
13. *C. rufipes*, Macl. = *C. nigritarsis*, Pasc.

14. *C. caelestis*, Pasc. = *C. laevicollis*, Bless. = *C. cyanipennis*, Hope.  
 15. *C. similis*, Blkb. = *C. longipennis*, Hope.  
 16. *C. opacicollis*, Blkb. (nec Macl.) = *C. vinosus*, Pasc. = *C. resplendens*, Boisd. (?).  
 17. *C. suturalis*, Pasc. = *C. sulcipennis*, Hope.  
 18. *C. longipennis*, Blkb. (nec Hope) = *C. cyaniventris*, Cart. (nov sp.).  
 19. *C. rugosus*, Germ. = *C. puncticollis*, Hope.  
 20. (?) *C. cræsus*, Blkb. = *C. mercurius*, Blkb.

The last named in each case has the priority, though in the case of Boisduval's species, *columbinus* and *resplendens*, their determination is too doubtful to allow their names to stand.

*C. cupreus*, Fab., was wrongly determined by Blackburn. The species determined by Blackburn as *cupreus* I have described as *C. maximus*.

*C. cupricollis*, Hope. Mr. Blair has examined the type from Melville Island, and writes: "*Cupricollis*, Hope = *semiticus*, Pasc = *smaragdulus*, Fab. *Cupricolle* type is unique in the peculiar purplish-bloom almost concealing the green on the elytra and still more marked on the thorax." (It is a common species in Northern Australia, of which I have seen a large number, which are either green or coppery, as in Pascoe's description of *semiticus*. A specimen labelled *vigilans* by Blackburn in the South Australian Museum is of the latter colour, and cannot be distinguished from *semiticus*, Pasc.—H. J. C.)

*C. cupripennis*, Hope. It is satisfactory to set at rest this much-disputed name. Mr. Blair writes: "*Cupripennis*, Hope = *froggatti*, Blkb. The two types agree much more nearly with each other than they do with specimens sent." This determination also agrees with (1) my own notes taken at the Hope Museum, (2) note by Champion quoted by Blackburn (Proc. Linn. Soc., N.S.W., 1893, p. 70), (3) notes sent me by Commander J. J. Walker. Germar was evidently mistaken in his determination, and Blackburn was misled by this. I believe *C. semiseriatus*, Blkb., to be doubtfully distinct from this, though distinguished in Blackburn's table by the "ocular sulcus." I have a specimen determined by Blackburn which has a small "sulcus," but the specimen sent by Mr. Blair compared with type is identical with the *C. cupripennis*, Hope, sent.

*C. laticollis*, Blkb. I cannot consider this more than a geographical variety of *C. colossus*, Blkb. I have specimens from Queensland which differ exactly as the author states; the prothorax in *colossus* is often very transverse.

With regard to the species described by Gebien, there is nothing in his description to distinguish *C. blackburni*, Geb., from *C. interioris*, Blkb.; nor is there any doubt in my mind as to the identity of *C. bicolor*, Geb., with *C. viridicollis*, W. S. Macl., an unusually vividly-coloured and distinct insect. Gebien describes the thorax as "steel-blue," while Macleay's type, which I have examined, has the thorax a dark rich-green, of a kind that is to be little distinguished from some shades of blue.

*C. tenuicornis*, Geb., must be very near *C. longulus*, Blkb., and *obscurus*, Blkb. (which may be only a variety of *longulus*), but its apparently impunctate elytral interstices and some differences in the antennæ would appear to distinguish these; while *longulus* can only be distinguished from *longipennis*, Hope (see below), by its slightly differently shaped prothorax and the stronger interstitial punctures of elytra.

*C. rugosus*, Germ. = *C. puncticollis*, Hope. Germar seems to have considered *rugosus* as synonymous with *sulcipennis*, Hope, but Mr. Blair tells me that the last is identical with *suturalis*, Pasc., a species whose interstices of elytra are almost impunctate. The size of *rugosus*, "magnitudine præcedentis" (the disputed *cupripennis*, Germ.), and the words "crebre transversim rugulosa" as applied to the elytra point to *puncticollis*, Hope, rather than to *sulcipennis*.

*C. longipennis*, Hope, was wrongly identified by Blackburn. Mr. Blair writes: "*Longipennis* agrees with *similis* in all the differences mentioned [by Blackburn in his description of the latter.—H. J. C.]. He was no doubt led astray by Hope's leaving 'Adelaide' as the suggested locality for *longipenne* in spite of 'S.R.' on his own label." I therefore propose the name *cyaniventris* for the Adelaide species described by Blackburn as *longipennis* (Proc. Linn. Soc., 1892, p. 456). The specimen sent me, as compared with type of *similis*, Blkb., and *longipennis*, Hope, has a *black* pronotum, as stated by Hope, the same being vari-coloured metallic in *cyaniventris*, a fact not noted by Blackburn in his description of *similis* when giving its distinctions from the Adelaide species.

*C. meyricki*, Blkb., is apparently only distinguished from *C. iridiventris*, Blkb., by the presence of a "sat agosto" ocular sulcus in the description, the same said to be "foveiform" in the table. My specimen of *C. meyricki* was compared with a specimen from the Elder Expedition in the South Australian Museum labelled by Blackburn. The ocular sulcus is scarcely defined, and is unsatisfactory as a distinguishing character in this case.

*C. arthuri*, Blkb., seems to me only a variety of *C. intermedius*, Blkb., if my specimens are correctly identified. I have *C. arthuri* taken in Brisbane and compared with co-types in Mr. Lea's collection. These exactly correspond with specimens of *C. intermedius*, Blkb., sent by Mr. Blair, compared with type.

*C. vinosus*, Pasc., is the species identified for me by Blackburn as probably *C. resplendens*, Bois., but on what evidence I do not know.

*C. suturalis*, Pasc. = *C. sulcipennis*, Hope, *vide* Blair, who has compared the types.

*C. cræsus*, Blkb. Mr. Blair notes the slight difference in the width between the eyes of *cræsus* and *mercurius*, together with some colour difference, but he concludes: "Should be inclined to doubt specific distinction of *cræsus* and *mercurius*, but have only unique type of each."

*C. simius*, Blkb. I cannot consider this otherwise than a variety of the widely-distributed *C. affinis*, Bless. Like all common species the varieties are very puzzling, and I have often seen specimens of *affinis* that correspond to the description of *simius*. This is confirmed by the specimen which Mr. Blair sends as compared with type of *simius*, which I have no hesitation in calling *C. affinis*, Bless.

The following are the descriptions of the new species:—

CHALCOPTERUS CUPRIVENTRIS, n. sp.

Elongate ovate, head and pronotum bronze-green (the former sometimes more obscure), elytra purple (sometimes with coppery reflections), with the suture and punctures green, prosternum black, rest of the under-side metallic-green or copper, coxæ and base of femora reddish, legs black, tarsal vestiture yellow.

*Head* closely punctate, eyes distant the length of basal joint of antennæ and bordered by a fine sulcus, antennæ with joint three equal to fourth and fifth combined, seventh to tenth successively longer and thicker than the preceding, eleventh more elongate but narrower than tenth. *Prothorax* truncate at apex, slightly sinuate at base, twice as wide at base as at apex, sides arcuately converging to apex, anterior angles widely obtuse, posterior (seen from above) acute, irregularly but distantly punctate with indications of a smooth medial line. *Scutellum* triangular, greenish, smooth. *Elytra* convex, subparallel, wider than prothorax, striate punctate, punctures on middle series small, larger on lateral series, rather closely set (about four punctures to the width of an interval), intervals flat on disc, very slightly convex towards sides, minutely but evidently



punctate; *metasternum* channelled and punctate, depressed near base; *abdomen* rugosely punctate. *Dimensions*—15-18 × 7.5-9 mm.

*Hab.*—Queensland: Townsville (F. Dodd).

Seven specimens examined, sent by Mr. H. Griffith, of Adelaide; also in Brussels Museum. The combination of large size, uniform coloration of elytra, flavo-setose tarsi and metallic pronotum and underside makes this species easy to determine. It is, perhaps, nearest *C. leai*, Blkb., and *C. velutinus*, W. S. Macl.; but *C. leai* (of which I have seen co-types) is differently coloured with much coarser sculpture of elytra, while *velutinus* (of which I know the type) has the under-side black eyes more approximate *inter alia*. In general form it is near *C. longulus*, Blkb., *C. leai*, Blkb., and *C. brevipes*, Blkb. The striæ are not deep, but evident when viewed sideways, and give an elongate appearance to the punctures, which are placed and are of the same average size as in *C. iridicolor*, Bless., though finer in the middle series. The metallic colour of the punctures is not constant, though strongly marked in four of the specimens.

#### NOTE.

*C. cupreus*, Fab. The above species is very near *cupreus*, Fab., and is the insect sent by Mr. Blair as the nearest he could find to the Fabrician type. Mr. Blair writes on the subject of *cupreus*:—"Type remains unique. Compared with enclosed it is somewhat smaller (15 × 7½ mm.), and I should say a little less elongate, though as the elytra are rather widely open it is difficult to judge. The pronotum is less convex, punctured about as strongly, though more sparingly, the punctures becoming smaller and sparser anteriorly; in colour it has a tarnished appearance, broadly blue round the margins shading into purple, and greenish on the disc, this is probably largely due to age, it is semi-opaque as in specimen; the elytra are a little more nitid, shining coppery and brassy, and blackish towards the apex; they are seriatly punctate, with interstices quite flat with fewer and finer sharper punctures, the punctures of the series are about as large, rather sharper and a little wider apart, with the series not at all impressed, the two outer series disappear a little below the level of the pin. The *under-side* is black, about as nitid, but *with no metallic colour*; tarsal vestiture fulvous, the distance between the eyes a little greater; ocular sulci are present below the eyes, but not well developed, and they do not extend between the eyes." While some specimens of the species I took for *cupreus*, Fab., have the under-side obscure, or black, there is still a strong presumption that either *C. cupreus* is a rare

and unique specimen, or that it is one of the later described species. It is possible that the author has misled some collectors in the confusion of *cupriventris* with *cupreus*.

#### CHALCOPTERUS PUNCTICOLLIS, Hope.

Slightly obovate, head, underside, legs, and tarsal clothing black, pronotum dark metallic-green (in old specimens black), sometimes with slight purple reflections, elytra varicoloured, chiefly cyaneous, the sutural region more or less golden or purple, sides and epipleuræ purple.

*Head* closely and strongly punctate, eyes scarcely sulcate, separated by a space equal to the length of the basal joint of antenna, antennæ with joint three nearly as long as fourth and fifth combined, sixth to tenth subequal in length but successively wider, eleventh acuminate. *Pronotum* much wider at base than at apex, sides arcuate, the lateral carina seen from above throughout, anterior angles produced, posterior obtuse, disc rather strongly, not closely punctate, with a fine lævigata central line. *Elytra* wider than prothorax at base, very little convex, widest behind middle, striate punctate, each elytron with eight striæ continuous from base to apex (besides a short scutellary stria), more deeply impressed at sides and apex, the punctures therein large, round, and close (larger and much closer than in *C. iridicolor*, Bless.), intervals convex, closely and strongly punctate. *Abdomen* and sides of *metasternum* strongly punctate, the prosternum coarsely, their episterna more finely punctate; hind tarsi with basal joint nearly as long as the rest combined, claws red. *Dimensions*—11.16 × 6.8 $\frac{3}{4}$  mm.

*Hab.*—Western Australia: Perth.

A common species, found in most collections, differing from *C. purpureus*, Germ., by its greater size, arcuate thorax, darker colour, and stronger punctuation of its upper-surface, while *suturalis*, Pasc., has a shining-black prothorax, and the intervals of elytra almost impunctate.

#### CHALCOPTERUS MAXIMUS, n. sp.

Widely ovate, head and pronotum metallic—sometimes coppery—elytra purple and green intermixed, the suture, lines of punctures, and epipleuræ greenish, sides golden-green, under-side, legs, antennæ, and tarsal clothing black.

*Head* closely, rather finely punctate, eyes without definite sulcus, space between them as wide as the basal antennal joint; antennæ very stout, rather short, scarcely enlarged apically, joint three shorter than fourth and fifth combined, sixth widest of all, shorter than the succeeding, seventh to tenth subequal, eleventh nearly as long as

and narrower than tenth. *Prothorax*  $4\frac{1}{2} \times 9$  mm., twice as wide at base as at apex, nearly straight in front, bisinuate at base, sides little narrowed on basal half, abruptly and subsinuately narrowed to the widely obtuse anterior angles, posterior angles (seen from above) subrectangular, lateral margins evident throughout from above, disc closely, not strongly, punctate, the median line more or less visible. *Scutellum* transverse triangular, metallic. *Elytra*  $19 \times 11\frac{1}{2}$  mm., of same width as prothorax at base, very convex; the highest point of curve (seen from the side) in front of middle, widest behind middle; seriate-punctate, the punctures in series close and small near suture (of the same size as in *C. iridicolor*, Bless.), larger towards the sides and clearly defined to the apex; intervals quite flat everywhere, closely and rather strongly punctate (stronger than in *C. iridicolor*, Bless.). Abdomen finely striolate, flanks of sternum with some larger punctures, prosternum carinate; posterior tarsi with joints one and four of equal length. *Dimensions*— $19-23 \times 10-13\frac{1}{2}$  mm.

*Hab.*—North Queensland: Endeavour River.

This is the species considered erroneously as *C. cupreus*, Fab., by Blackburn, and is the largest *Chalcopterus* known to me. The general colour and form of *C. maximus* is nearest *C. cupripennis*, Hope (= *froggatti*, Blkb.), especially in its wide, somewhat explanate prothorax, and its mingled colours, with greenish suture. The coppery pronotum is sometimes obscured by age or alcohol, and appears black. In my two fresher specimens the greenish line of punctures is in marked contrast with the more coppery intervals. Types in the author's collection.

#### CHALCOPTERUS CÆSAR, n. sp.

Convex, elongate-ovate, head and prothorax metallic-green and purple, elytra with brilliantly variegated colours arranged in vittæ in the following order: the suture golden, then stripes of purple, blue, golden-green, purple, green, lastly the extreme border narrowly golden; the prosternum also slightly metallic (in one specimen brightly so). Abdomen, legs, antennæ nitid black, tarsal vestiture black, with some fine reddish hairs on apical-joint.

*Head* deeply, closely punctate, distance between eyes greater than the basal joint of the antennæ, without clearly-defined ocular sulcus, antennæ much longer and less enlarged at apex in male than in female, third joint longer than first and second combined, and fully as long as the fourth and fifth combined, fourth shorter than fifth, eighth to tenth evidently shorter than the preceding, joint eleven longer and more acuminate in male, shorter and more obtuse in female.

*Prothorax* widest at base, base twice the width of apex (7 and 3·5 mm. respectively), apex truncate, base sublobate, sides arcuately converging from base to apex, anterior angles obtuse, posterior (seen from above) acute, (from the sides) obtuse, lateral carina not, or very little, evident from above; disc distinctly but not coarsely punctate (as in *C. superbus*, Blkb.), punctures deep and fairly close. *Scutellum* triangular, metallic and nitid, impunctate. *Elytra* seriate-punctate, each with eight rows, besides the scutellary and lateral rows, of small, deep, evenly-placed punctures, at intervals of the diameter of one of them; the intervals quite flat, closely punctate with punctures not much smaller than those in the series, both seriate and interstitial punctures larger and more clearly differentiated than those in *C. affinis*, Bless. *Abdomen* closely punctate, finely strigose on basal segments, *metasternum* sulcate behind, carinate in front, prosternum coarsely punctate, posterior tarsi with basal joint as long as the rest combined. *Dimensions*—Male, 20 × 10·5 mm.; female, 21 × 11·5 mm.

*Hab.*—Western Australia: Sandstone (C. J. Clayton); North-Western Australia (C. French).

Four specimens are under examination. This is perhaps the most beautiful of all the species of this genus, as well as one of the largest. It is readily separated from its allies by the combination of large size, coloured thorax, head, and prosternum, elytra splendidly variegated in vittæ, intervals flat and strongly punctate, the elytral punctures small in proportion to the dimensions. It is perhaps nearest to *C. rugosipennis*, Macl., in general appearance, but differs widely in the size of the punctures. The outline of the elytra, seen from the side, is an even, gentle curve, with the highest point near the middle. The male is more convex, with the sides more parallel, the female being slightly widened behind the middle. Types in the author's collection.

#### CHALCOPTERUS GILESI, n. sp.

Elongate-ovate, elytra subcylindric and parallel, head and prothorax dull-black, under-side and legs nitid-black, apical-joints of antennæ pitchy-brown, tarsal vestiture red; elytra splendidly variegated in longitudinal vittæ in the following order: suture narrowly purple, intervals one and two blue, third and fourth green or golden, shading off to purple, then green, purple, with extreme sides and epipleuræ golden or green.

*Head* distinctly, closely punctate, less closely on forehead than on episterna, eyes separated by a space greater than the length of the antennal basal joint, without definite ocular

sulcus: antennæ slightly enlarged towards apex, joint three about equal to first and second combined and less than fourth and fifth combined, fourth to seventh equal, eighth to eleventh very little shorter than preceding, eleventh ovate-acuminate. *Prothorax* 3·5 × 5·5 mm., moderately convex, and little narrowed anteriorly, truncate at apex, sublobate at base, sides (seen from above) with posterior two-thirds nearly straight, with the lateral carina evident, seen from the sides evenly, but not widely, rounded, all angles widely obtuse, under a lens seen to be finely, not closely nor deeply, punctate. *Elytra* nearly twice as long as wide, subparallel and convex, deeply striate-punctate, the intervals strongly convex, seriate punctures large, round, deeply impressed, separated evenly by a distance of the diameter of one, becoming larger and less hidden in the striæ towards the sides, and smaller towards the base, both striæ and punctures deeply impressed to the apex. (The seriate punctures very much as in *C. plutus*, Blkb.)—intervals almost lævigata and nitid. *Abdomen* strongly strigose, *femora* and *metasternum* strongly punctate, prosternum very tumid and carinate in the middle, posterior tarsi with basal joint not as long as the rest combined. Dimensions—15-17 × 6·5-7·5 mm.

*Hab.*—North-Western Australia: Condon (H. Giles).

A very handsome species, of which several specimens, three of which are now before me, were sent by that very capable naturalist, Mr. Henry Giles, of the Zoological Gardens, Perth, and taken by him at Condon. A specimen sent to the Rev. T. Blackburn was returned with the label "unknown to me." It is very near *C. costatus*, Blkb., in shape and general appearance (of which I have seen a co-type), but differs in its more variegated and vittate arrangement of colours, and in the considerably smaller punctures of the elytral series. Also near *C. puncticollis*, Hope, so far as the convexity of intervals and the depth of striæ are concerned; but Hope's species is much less brilliantly coloured, with the interstitial punctures very strong. *C. gilesi* is not very near *C. zonatus*, Blkb., though standing next to it in my tabulation.

#### CHALCOPTERUS DODDI, n. sp.

Ovate, convex; head, prothorax, under-side, legs, and basal joints of antennæ nitid-black, apical-joints of antennæ piceous; elytra green at the suture and base of punctures, otherwise nitid-coppery (with a tinge of green), epipleuræ green and purple, tarsal clothing red.

*Head* closely punctate, eyes separated by a space scarcely equal to the basal joint of antennæ, without ocular sulcus, antennæ manifestly enlarged towards apex, joint three about

equal to first and second combined, less than fourth and fifth combined, fourth to eleventh subequal in length, seventh to tenth increasingly wider. *Prothorax* 3.5 × 6 mm., truncate at apex, sublobate at base, sides (seen from above) evenly, arcuately converging from base to apex, (seen from the side) more strongly transverse and rounded behind the middle, apical part of lateral carina only evident from above; disc distinctly irregularly punctate (less closely than in *C. catenulatus*, Blkb.), a lævigata central line near base only, all angles widely obtuse (seen from above the posterior angles subrectangular). *Scutellum* triangular, metallic, and nitid. *Elytra* regularly ovate, longitudinally more convex than *C. catenulatus*, Blkb., sides not at all parallel, seriate-punctate, series with large subfoveate punctures, irregular in size, shape, and spacing, becoming smaller at base and near suture, larger at apex and sides (extreme lateral row very small), the intervals flat on centre, irregularly subconvex at sides and apex, finely but distinctly punctate. *Abdomen* with apical segment punctate, other segments closely strigose, *metasternum* depressed and widely sulcate behind, finely rugose in front, prosternum carinate, posterior tarsi with basal joint less than the rest combined. *Dimensions*—17 × 8.5 mm.

*Hab.*—North Queensland: Kuranda (F. P. Dodd).

A single specimen received some years ago from Mr. Dodd is superficially most like *C. catenulatus*, Blkb. It differs in having its prothorax quite black (in *C. catenulatus* it is coppery), in having no ocular sulcus, in its elytra differently coloured with all the punctures smaller and more irregular (especially towards the sides and apex, where many elongate punctures prevail). The intervals near apex are transversely ridged, and the interstitial punctures are very fine. This species is more coarsely punctured in the series than any other known to me except *C. catenulatus*, Blkb. Type in the author's collection.

#### CHALCOPTERUS ANGUSTICOLLIS, n. sp.

Very elongate and narrow, widened rather strongly behind the middle, head, prothorax, under-side, legs, and basal half of antennæ nitid-black, apical-half of antennæ opaque and setose, elytra with alternate, irregular stripes of coppery-purple, blue or green, extreme sides (in one example the suture also) slightly golden, colours not definitely in vittæ, tarsi nigro-setose.

*Head* finely and closely punctate, eyes unusually widely separated, by space greater than the length of basal joint of antennæ, ocular sulcus not clearly defined. Antennæ thick,

slightly enlarged at apex, joint three as long as first and second combined, shorter than fourth and fifth combined, fourth and sixth equal, seventh to eleventh setose and shorter than preceding. *Prothorax*  $3 \times 4.5$  mm., width at apex equal to length, truncate at apex slightly sinuate at base, sides (from above) almost straightly converging from base to apex, (seen sideways) lightly arcuate, all angles obtuse, clearly, regularly punctate without any indication of central line, a very light foveate impression at apex in the middle. *Scutellum* black, triangular, and impunctate. *Elytra* elongate-obovate, moderately convex, sides widening behind the middle, seriate-punctate, with lines of different-sized punctures rather widely separated, and less strongly impressed and smaller at base and apex, larger and deeper on sides; intervals flat on centre, subconvex at sides, closely and evidently punctate. *Abdomen* closely, finely punctate, scarcely at all strigose, *metasternum* with larger punctures, close at the flanks, sparse at the centre; prosternum carinate, basal joint of hind tarsi as long as the rest combined. *Dimensions*— $15 \times 7$  mm.

*Hab.*—North Queensland. .

Two specimens sent by Mr. C. French, labelled North Queensland, are peculiar in the narrow, elongate form of the prothorax, the base of which is one and a half times the width of the apex, and the elongate-obovate elytra. The seriate punctures are very irregular in size and distance apart, but in general are larger and more distant than those in *C. variabilis*, Bless.; the interstitial are slightly finer and less close than the corresponding punctures in *variabilis*. Both sexes are present. The eyes are at least as widely, or more widely, separated than in *C. howitti*, Pasc. It is near *C. perlongus*, Blk., in dimensions and colour (of which I have a co-type, kindly given me by Mr. Blackburn), but it is easily distinguished from Blackburn's species by its coarser seriate and interstitial punctures, and the wider space between the eyes. Types in the author's collection.

#### CHALCOPHTERUS ELONGATUS, n. sp.

Elongate-ovate, cylindrical; head and prothorax opaque-black, antennæ, abdomen, and legs nitid-black, sternum slightly metallic, elytra varicoloured, the suture purple, disc blue and green, then widely purple, with extreme sides and epipleuræ green or golden, the colours more or less merged, not in distinct vittæ; tarsal vestiture black.

*Head*, eyes separated by a distance equal to the length of basal joint of antennæ, ocular sulcus not defined, antennæ having joint three greater than first and second combined,

less than fourth and fifth combined, fourth to eighth sub-equal, remaining joints wanting. *Prothorax*  $4 \times 2.5$  mm., narrow and truncate at apex, slightly sinuous at base, sides (seen from above) almost straightly converging from base to apex, (from side-view) moderately and evenly arcuate, all angles obtuse (seen from above, posterior angles appear rectangular); distinctly, evenly, punctate, with evident lævigata central line. *Scutellum* black, triangular, impunctate. *Elytra* elongate and cylindric, slightly enlarged behind the middle; seriate-punctate, with punctures of even size and distance apart; intervals quite flat and strongly punctate (both seriate and interstitial punctures very much as in *C. variabilis*, Bless., but the former more even in size and more close, the latter a little finer). *Abdomen* finely and regularly punctate, the flanks more strongly so, *metasternum* sparsely punctate at the sides only, prosternum with a small carina, posterior tarsi with basal joint shorter than the rest combined. *Dimensions*—13-14  $\times$  6.5 mm.

*Hab.*—Queensland.

Three specimens (with mutilated antennæ) were given me by Mr. A. M. Lea. The species evidently differs from *C. cylindricus*, Blkb., by its black tarsal clothing and the finer seriate punctures of the elytra (which in *cylindricus* resemble the intermediate rows of *C. punctipennis*, Macl.). The colours are not exceptionally brilliant, as is the case in *C. cylindricus*, which, moreover, is slightly narrower than the above, with the prothorax a different shape. It differs from *C. perlongus*, Blkb., in its duller black, shorter, and more rounded prothorax, shorter and more convex (longitudinally) elytra, with the interstitial punctures stronger. Types in the author's collection.

#### CHALCOPTERUS PRISMATICUS, n. sp.

Elongate-ovate, parallel, head, pronotum, and under-side very nitid-black, elytra splendidly versicolorous in vittæ, *i.e.*, suture purple, then one interstice blue, next two interstices gold or greenish, then purple, gold, or green, with shoulders, sides, and epipleuræ blue.

*Head* densely punctate, without lævigata intervals, the punctures round, deep, and neither rugose nor confluent; eyes widely separated (more widely than in *C. affinis*, Bless.), without ocular sulcus; antennæ long, joint three longer than first and second combined, and nearly, or quite, as long as fourth and fifth combined, fourth to eleventh of nearly equal length, evidently widened towards apex. *Prothorax*  $3 \times 5$  mm., very convex, apex truncate, base slightly lobate in the middle, sides rather widely and evenly rounded and arcuately converging



to apex, all angles really obtuse, though seen from above the posterior angles apparently rectangular; distinctly punctate, the punctures smaller and less dense than on head, without defined lævigata portion or any vestige of middle line. *Elytra* moderately convex (less so than in *C. cylindricus*, Blkb.), its outline (seen from the side) rather straight, slightly wider than and four times as long as the prothorax; strongly striate-punctate, the intervals costiform, punctures in striæ large, close, and regular, slightly increasing in size from the suture outwards, the intervals between the punctures less than the diameter of one, their size larger than in *C. punctipennis*, Macl., intervals minutely but distinctly punctate. *Abdomen* finely rugose and punctate, sternum punctate only, prosternum carinate, *legs* very nitid and finely punctate, tarsi thickly rufo-setose, hind tarsi with basal joint nearly as long as the rest combined. *Dimensions*—14 × 7 mm.

*Hab.*—North-West Queensland: Camooweal.

Two specimens, both apparently female, sent to Dr. E. W. Ferguson, and generously presented to the author, add an exceptionally beautiful species to the genus. It is easily distinguished by its combination of deeply-striated elytra, brilliant colours, nitid surface, wide eye interval, and rufo-setose tarsi. Wider and less convex than *C. cylindricus*, its colour separates it at once from *C. costatus*, Blkb., near which it stands in my table. Type in the author's collection.

#### CHALCOPTEUS IRIDESCENS, n. sp.

Elongate, subparallel, convex; mouth purple and blue, front and vertex coppery-purple, pronotum bright burnished-copper, elytra variegated, the suture bright-gold, then a narrow strip of bright-purple (these colours forming an elongate patch, not in vittæ nor continuous to apex), shoulders bronze, the rest of elytra a brilliant iridescent-blue, changing to green or gold, according to the light reflected; under-side brilliantly nitid and variegated, the central portions blue or green with purple reflections, epimera and prosternum purple. Legs deep purple-blue. Tarsi with yellow clothing.

*Head* closely and evidently punctate, eyes distant, slightly less than the length of the basal joint of antenna, antennæ widening to apex, joint three shorter than fourth and fifth combined, sixth to tenth gradually longer and wider, eleventh longest cylindrical. *Pronotum* truncate in front, sinuate behind, base less than twice as wide as apex, sides arcuately converging to apex, all angles obtuse and rounded, disc impunctate and mirror-like. *Scutellum* triangular and depressed. *Elytra* wider than prothorax, convex transversely and more than usually so longitudinally,

with apex somewhat acuminate; seriate-punctate (punctures sometimes connected by very fine striæ), the punctures in striæ small, evenly and distantly placed (smaller than in *C. iridicolor*, Bless., or *C. variabilis*, Bless.), the series evanescent towards apex, intervals flat and sparsely dotted with very minute punctures (only visible under a lens). *Abdomen* minutely punctate, *metasternum* obliquely striolate. *Dimensions*—14 × 7 mm.

*Hab.*—South Australia: Nullarbor Plains (Eucla district).

A single specimen, kindly given me by Mr. C. French, is the most brilliantly-coloured *Chalcopterus* known to me. The colours are so elusive that it is difficult to describe them accurately. The under-side is as brilliant as the upper-surface. In size, form, and colour it is nearest *C. meyricki*, Blkb. (of which I have seen a co-type in the South Australian Museum), but it differs in the following particulars from *C. meyricki*: (1) Colours more brilliant and varied; (2) eyes less widely separated; (3) seriate-punctures much smaller, more distant, intervals distinctly though minutely punctate; (4) tarsi with yellow clothing. Type in the author's collection.

#### CHALCOPTERUS LATIFRONS, n. sp.

Elongate-ovate, subparallel, depressed; head, pronotum, under-side, and legs black, moderately nitid, elytra variegated, suture and sides green, the greater part of disc purple, or green suffused with purple. Tarsal clothing black.

*Head* densely punctate, space between eyes wider than the length of the basal joint of antenna (wider than in *C. howittii*, Pasc.), antennæ stout and gradually thickened outwards, third about as long as fourth and fifth combined, four apical-joints subequal and shorter than the preceding joints. *Prothorax* twice as wide as long, slightly sinuate at apex and base, sides evenly but arcuately converging to apex, disc closely punctate and very finely rugose, smooth medial line evident for the greater part, anterior angles a little produced, widely obtuse, posterior angles (seen from above) acute. *Elytra* of the same width as prothorax at base, sides parallel for the greater part, depressed; seriate-punctate; the punctures in series moderately large and closely set (as large as in *C. variabilis*, Bless., but much closer), intervals very coarsely and densely punctate, and slightly rugose. *Abdomen* nitid, closely striolate and punctate, *metasternum* coarsely punctate and obliquely-strigose. *Dimensions*—16 × 8 mm.

*Hab.*—Western Australia: Shark Bay and Murchison River.

Four specimens, from Mr. C. French, are not very near any of those described that combine black pronotum, obscure

elytral colours with black tarsal clothing. In form near *C. leai*, Blkb., and *C. obscurus*, Blkb. The punctures of the intervals are coarser and deeper than those in *C. variabilis*, Bless., and are unusually strong. The eyes are exceptionally widely separated, while the outline, seen sideways, shows less convexity than in any other species known to me. Type in the author's collection.

CHALCOPTERUS CYANEUS, n. sp.

Shortly oval, moderately convex, head, legs, and under-side black, pronotum dark-blue, very nitid, elytra nitid-blue, shoulders and sides with metallic reflections, antennæ piceous, tarsal clothing yellow.

*Head* finely punctate, eyes widely separated (as in *C. howittii*, Pasc.), antennæ with basal joints slender, apical-joints much thickened, third as long as fourth and fifth combined, sixth to eleventh successively longer, eighth to eleventh much thicker than preceding. *Prothorax* apex truncate, base slightly sinuate, sides well rounded and converging to apex, all angles obtuse and rounded, twice as wide at base as at apex, closely and finely punctate, with faint indication of a smooth medial line in front. *Elytra* wider than prothorax at base, oval, convex, humeri rather prominent; seriate-punctate, intervals quite flat; the seriate punctures deep, round, and rather close (four to the space of an interval), intervals finely but distinctly punctate; under-side very finely striolate. *Dimensions*— $11 \times 5\frac{1}{2}$  mm.

*Hab.*—North-Western Australia.

A single specimen in my collection from a forgotten source. Amongst the species which combine blue pronotum and elytra, with yellow clothing to the tarsi, it is nearest to *C. pulcher*, Blkb., and *C. hartmeyeri*, Geb. From both it differs in its much more nitid colour and stronger punctuation of pronotum and elytra, besides being smaller. The form is like *C. palmerstoni*, Blkb., or *C. amethystinus*, Fab.; the punctures of elytra are arranged somewhat as in *C. purpureus*, Germ. Type in the author's collection.

CHALCOPTERUS SERICATUS, n. sp.

Ovate convex, head, pronotum, under-side, and legs black, elytra rose-purple, with sides and epipleuræ green or blue, tarsal clothing red.

*Head* scarcely, or very finely, punctate, eyes with small sulcus on inner margin, and separated by a distance equal to the length of first joint of antennæ, antennæ with joint three nearly as long as fourth and fifth combined, sixth to eleventh subequal in length, but successively slightly widening. *Prothorax* considerably (not twice) wider at base than

apex, the former bisinuate, the latter arcuate, sides widely rounded (seen from the sides), all angles obtuse, disc finely punctate, with a smooth medial line and a fovea on each side near the middle of disc. *Scutellum* black, minutely punctate. *Elytra* very convex (as in *C. affinis*, Bless.), finely striate-punctate, the seriate punctures close together, distinctly larger than in *C. affinis*, and lying in shallow striæ, clearly defined throughout except near base, intervals everywhere quite flat and impunctate, and very finely transversely rugose, giving a silky opaque appearance. *Abdomen* finely striolate. *Dimensions*—12-13 × 6-6½ mm.

*Hab.*—North Queensland: Coen district (H. Hacker); Endeavour River (G. Masters).

Two specimens examined—one given me by Mr. Hacker some years ago, the other was amongst some duplicates of the late Mr. Masters—are evidently undescribed. Amongst the species which combine black pronotum, with red- or yellow-clad tarsi only *mundus*, Blkb., *acutangulus*, Blkb., and *minor*, Blkb., could possibly be confused with it; but the first two of these have their elytral intervals more or less punctate, while in *minor* they are almost smooth, while none of them are striate. I know of no other *Chalcopterus* having this finely rugose but impunctate surface (easily seen under a lens). The colour is an almost uniform purple, except at the sides. Type in the author's collection.

*Table of* CHALCOPTERUS.

Species marked thus \* are unknown to the author, or determined only by description.

The number in the second column indicates how far the specified character is inclusive in the first column; thus 3|9 "Elytra striate" applies to all species from 3-9, inclusive, in the first column.

1	91	Pronotum black.	
2	44	Tarsi nigro-setose.	
3	9	Elytra striate.	
4		Size large, 19-21 mm. long	... <i>superbus</i> , Blkb.
5	9	Size smaller, 10-15½ mm. long.	
6		Elytral colours in distinct longitudinal vittæ	... .. <i>interioris</i> , Blkb. * <i>blackburni</i> , Geb.
7	9	Elytral colours not in distinct longitudinal vittæ.	
8		Size small, 10-11 mm. long; form depressed	... .. <i>sulcipennis</i> , Hope <i>suturalis</i> , Pasc.
9		Size larger, 15 mm. long; form very convex	... .. <i>mastersi</i> , Blkb.
10	44	Elytra seriate-punctate.	
11	13	Size large, 19-20 mm. long.	
12		Colours in distinct longitudinal vittæ	... .. <i>imperialis</i> , Blkb.
13		Colours not	... .. * <i>kochi</i> , Blkb.

14	41	Size smaller, not more than 16 mm. long.	
15	23	Length more than twice breadth.	
16		Ocular sulcus distinct and foveate	<i>interrogationis</i> , Geb.
17	23	Without distinct ocular sulcus.	
18		Eyes very approximate ... ..	<i>prospiciens</i> , Blkb.
19	23	Eyes not very approximate.	
20		Sternum metallic ... ..	<i>elongatus</i> , n. sp.
21	23	Sternum black.	
22		Form cylindrical, seriate punctures as in <i>C. affinis</i> , Bless. ... ..	<i>perlongus</i> , Blkb.
23		Form obovate, seriate punctures much larger ... ..	<i>angusticollis</i> , n. sp.
24	29	Length almost exactly twice breadth.	
25		Size large, 16 mm. long; eyes widely separated ... ..	<i>latifrons</i> , n. sp.
26	29	Size smaller, not more than 12 mm. long.	
27		Elytral intervals distinctly punctate, seriate punctures continuous to apex ... ..	<i>difficilis</i> , Blkb.
28		Elytral intervals more finely punctate, seriate punctures obsolete at apex ... ..	* <i>puer</i> , Blkb.
29		Elytral intervals almost lævigata, prothorax almost straight ... ..	* <i>palmerstoni</i> , Blkb.
30	44	Length less than twice breadth.	
31		Ocular sulcus distinct ... ..	<i>segnis</i> , Blkb.
32	44	Ocular sulcus wanting.	
33	41	Size medium, 10-14 mm. long.	
34	40	Elytra more or less concolorous.	
35	37	Colour violet-bronze.	
36		Interstitial punctures nearly as large as seriate ... ..	<i>affinis</i> , Bless. <i>howitti</i> , Pasc. var. <i>simius</i> , Blkb.
37		Interstitial punctures very fine	* <i>sparsus</i> , Blkb.
38		Colour green ... ..	<i>clypealis</i> , Blkb.
39		Colour deep silky-purple, shoulders and sides green ... ..	<i>exoletus</i> , Blkb.
40		Colour uniform olive bronze-black ... ..	<i>cribratus</i> , Blkb.
41		Colour variegated (sides of prothorax straight) ... ..	<i>intermedius</i> , Blkb. <i>arthuri</i> , Blkb.
42	44	Size small, 7 mm. long.	
43		Eyes close, seriate punctures of even size and close ... ..	<i>proximus</i> , Blkb.
44		Eyes normally widely placed, seriate punctures varying in size and distant ... ..	<i>modestus</i> , Blkb.
45	91	Tarsi flavo- or rufo-setose.	
46	58	Elytra striate.	
47	51	Striæ deep, intervals costiform.	
48		Colours in distinct longitudinal vittæ ... ..	<i>prismaticus</i> , n. sp.
49	51	Colours not.	

- 50 Elytra parallel, seriate punctures large ... .. *costatus*, Blkb.
- 51 Elytra obovate, seriate punctures smaller ... .. *longiusculus*, Blkb.
- 52 58 Striæ less deep, intervals more or less convex.
- 53 57 Colours in distinct longitudinal vittæ.
- 54 Eyes bordered by a carina and sulcus ... .. *carinaticeps*, Blkb.
- 55 57 Eyes not so bordered ... ..
- 56 Length greater than twice breadth, interstices sublævigata ... .. *gilesi*, n. sp.
- 57 Length less than twice breadth, interstices strongly punctate ... .. *zonatus*, Blkb.
- 58 Colours not in distinct longitudinal vittæ ... .. *mercurius*, Blkb.  
var. *cræsus*, Blkb.
- 59 91 Elytra seriate-punctate.
- 60 66 Ocular sulcus distinct.
- 61 Pronotum lævigata ... .. *lævicollis*, Bless.  
*cyanipennis*, Hope  
*cælestis*, Pasc.
- 62 66 Pronotum punctate.
- 63 65 Interstices of elytra more or less punctate.
- 64 Length 12-14 mm., seriate punctures finer than in *C. affinis*. Bless. ... .. *acutangulus*, Blkb.
- 65 Length 10 mm., seriate punctures larger than in *C. affinis*, Bless. *mundus*, Blkb.
- 66 Interstices of elytra impunctate and minutely rugose ... .. *sericatus*, n. sp.
- 67 91 Ocular sulcus wanting.
- 68 72 Length greater than twice breadth.
- 69 71 Size medium, 14 mm. long; intervals flat.
- 70 Eyes normally distant, colours in vittæ ... .. *cylindricus*, Blkb.
- 71 Eyes almost contiguous, colours obscure ... .. *boops*, Blkb.
- 72 Size small, 11 mm. long; colour black ... .. \**bovilli*, Blkb.
- 73 84 Length almost exactly twice breadth.
- 74 78 Prothorax with basal half subparallel.
- 75 77 Elytral intervals distinctly punctate.
- 76 Size large, 19-21 mm. long; seriate punctures large ... .. *colossus*, Blkb.  
*laticollis*, Blkb.
- 77 Size smaller, 16 mm. long; seriate punctures as in *C. variabilis*, Bless. ... .. *longulus*, Blkb.
- 78 Elytral intervals apparently impunctate ... .. \**tenuicornis*, Geb.

79	84	Prothorax with sides arcuate from base to apex.	
80	83	Seriate punctures distinct from interstitial.	
81		16 mm. long, interstitial punctures finer and more distant than in <i>longulus</i> , Blkb. ... ..	<i>longipennis</i> , Hope <i>similis</i> , Blkb.
82		17 mm. long, seriate punctures very large ... ..	<i>doddi</i> , n. sp.
83		18-21 mm. long, seriate punctures very small ... ..	<i>gracilicornis</i> , Blkb.
84		Seriate punctures scarcely distinct from interstitial ... ..	<i>iris</i> , Blkb.
85	91	Length less than twice breadth.	
86		Size large, 20 mm. long ... ..	<i>palmerensis</i> , Blkb.
87	90	Size medium, 14-16 mm. long.	
88	90	Elytral intervals punctate.	
89		Distance between eyes equal to basal antennal joint ... ..	<i>obscurus</i> , Blkb.
90		(1)Distance between eyes less than basal antennal joint ... ..	<i>neglectus</i> , Blkb.
91		Elytral intervals quite, or almost, lævigata, 10-12 mm. long ... ..	<i>minor</i> , Blkb.
92	209	Pronotum metallic or coloured.	
93	170	Tarsi nigro-setose.	
94	100	Elytra striate.	
95	97	Ocular sulcus defined.	
96		Elytral colours in vittæ, intervals rugose, distinctly punctured ... ..	<i>punctipennis</i> , Macl.
97		Elytral colours not in vittæ, intervals nitid, little punctured ... ..	<i>plutus</i> , Blkb.
98	100	Ocular sulcus not defined.	
99		Intervals strongly convex, sides of prothorax arcuate ... ..	<i>puncticollis</i> , Hope
100		Intervals lightly convex, sides of prothorax nearly straight ... ..	<i>purpureus</i> , Germ.
101	170	Elytra seriate-punctate.	
102	106	Intervals sub-convex.	
103	105	Underside black, ocular sulcus defined.	
104		Elytral colours in vittæ ... ..	<i>iridicolor</i> , Bless.
105		Elytral colours not in vittæ ... ..	<i>murrayensis</i> , Blkb.
106		Underside iridescent, ocular sulcus not defined ... ..	<i>cyaniventris</i> , n. sp. ( <i>longipennis</i> , Blkb.)
107	170	Intervals flat.	
108	113	Length greater than twice breadth.	
109		Size large, 18 mm. long ... ..	<i>brevipes</i> , Blkb.
110	112	Sides of prothorax arcuate.	
111		Ocular sulcus subfoveiform, form very narrow ... ..	* <i>macer</i> , Blkb.
112		Ocular sulcus defined, form much wider ... ..	<i>lepidus</i> , Blkb.
113		Sides of prothorax nearly straight, ocular sulcus wanting	<i>eyrensis</i> , Blkb.

(1) *Neglectus*, Blkb., is one of the rare exceptions in which the pronotum may be black or slightly metallic.

- 114 132 Length almost exactly twice the breadth.
- 115 Elytral colours in vittæ ... .. *oblongus*, Blkb.
- 116 132 Elytral colours not in vittæ ... ..
- 117 Underside blue ... .. *iridiventris*, Blkb.  
var. (?) *meyricki*, Blkb.
- 118 132 Underside black.
- 119 123 Ocular sulcus defined.
- 120 Size larger, 15 mm. long ... .. *punctulatus*, Blkb.
- 121 123 Size smaller, 10-11 mm. long.
- 122 Prothorax coarsely punctate ... .. *yorkensis*, Blkb.
- 123 Prothorax finely punctate ... .. *eremita*, Blkb.
- 124 132 Ocular sulcus not defined.
- 125 129 Interstitial punctures distinct, elytra variegated.
- 126 Seriate and interstitial punctures scarcely differentiated ... .. *micans*, Blkb.
- 127 132 Seriate and interstitial punctures distinctly differentiated.
- 128 Anterior angles of prothorax prominent, lateral carina nearly straight ... .. *vividus*, Blkb.
- 129 Anterior angles of prothorax not prominent, lateral carina arched downwards ... .. *variabilis*, Bless.
- 130 132 Interstitial punctures very fine, elytra blue.
- 131 Head black, 12 mm. long ... .. *bellus*, Blkb.
- 132 Head blue, 9 mm. long ... .. *carus*, Blkb.
- 133 170 Length less than twice breadth.
- 134 138 Size very large, 17-21 mm. long.
- 135 137 Elytral colours in vittæ.
- 136 Elytral punctures small, colours extending to head and sternum *cæsar*, n. sp.
- 137 Elytral punctures large, head and sternum black ... .. *rugosipennis*, Macl.
- 138 Elytral colours not in vittæ, head metallic ... .. *maximus*, n. sp.  
(*cupreus*, Blkb.)
- 139 170 Size smaller, 10-16 mm. long.
- 140 146 Under-side iridescent or metallic.
- 141 143 Ocular sulcus defined.
- 142 Space between eyes very wide, pronotum and elytra widely discoloured ... .. *viridicollis*, W. S. Macl.  
\**bicolor*, Geb.
- 143 Space between eyes very narrow, pronotum and elytra concolorous ... .. *smaragdulus*, Fab.  
*semiticus*, Pasc.  
*vigilans*, Blkb.
- 144 170 Ocular sulcus not defined.
- 145 Space between eyes much less than basal joint of antenna ... .. *cairnsi*, Blkb.
- 146 Space between eyes much wider, colours more brilliant ... .. *fervens*, Germ.
- 147 170 Under-side black.
- 148 150 Femora red or red-brown.
- 149 Prothorax strongly narrowed anteriorly ... .. \**michaelseni*, Geb.



150		Prothorax with sides subparallel	* <i>parallelocollis</i> , Geb.
151	170	Femora black.	
152	158	Size larger, 14-16 mm. long.	
153		Pronotum coarsely rugose punctate ... ..	<i>rugosicollis</i> , Macl.
154	170	Pronotum finely punctate.	
155	157	Seriata and interstitial punctures not strongly differentiated.	
156		Metasternum and femora strongly punctate ... ..	<i>placidus</i> , Blkb.
157		Metasternum and femora not strongly punctate ... ..	<i>cupripennis</i> , Hope <i>froggatti</i> , Blkb.
			var. (?) <sup>(2)</sup> <i>semi-seriatus</i> , Blkb.
158		Seriata and interstitial punctures distinctly differentiated	<i>inconspicuus</i> , Blkb.
159	170	Size smaller, 10-13 mm. long.	
160	167	Elytral intervals distinctly punctate.	
161		Seriata and interstitial punctures scarcely (or not) differentiated	<i>fastuosus</i> , Germ. <i>obsoletus</i> , Macl. <i>confluens</i> , Blkb.
162	170	Seriata and interstitial punctures distinctly differentiated.	
163		Head black, eyes very widely separated ... ..	<i>polychromus</i> , Pasc.
164		Head black, eyes not very widely separated ... ..	<i>tinctus</i> , Blkb.
165	169	Head metallic.	
166		Pronotum somewhat opaque, seriate punctures large ... ..	<i>vinosus</i> , Pasc. (?) <i>resplendens</i> , Boisd.
167		Pronotum very nitid, seriate punctures much smaller ... ..	<i>versicolor</i> , Blkb.
168	170	Elytral intervals sublævigatæ.	
169		Upper-surface very nitid ... ..	<i>lætus</i> , Blkb.
170		Head black, upper-surface less nitid ... ..	* <i>juvenis</i> , Blkb.
171	209	Tarsi flavo-setose (or rufo-setose).	
172		Elytra striate, head and under-side generally metallic ... ..	<i>cupriventris</i> , n. sp.
173	209	Elytra seriate-punctate.	
174	176	Length greater than twice breadth.	
175		Eyes very close, under-side black	* <i>ocularis</i> , Blkb.
176		Eyes not very close, under-side blue ... ..	<i>gracilior</i> , Blkb.
177	192	Length almost exactly twice breadth.	
178	180	Size large, 16-18 mm. long.	
179		Elytral colours in distinct vittæ	<i>catenulatus</i> , Blkb.
180		Elytral colours not in distinct vittæ (eye carinate on inner-margin) ... ..	<i>leai</i> , Blkb.
181	192	Size smaller, 12-14 mm. long.	

(2) Though distinguished by the author by its "ocular sulcus"—and I possess a specimen named by him—in a long series I have been unable to separate *semi-seriatus* from *froggatti*.

182	Head and under-side brilliantly iridescent ... ..	<i>iridescens</i> , n. sp.
183 192	Head and under-side black.	
184	Elytra vari-coloured, intervals distinctly punctate ... ..	<i>mimus</i> , Blkb.
185 192	Elytra concolorous (blue or green), intervals not distinctly punctate.	
186	(3) Femora red ... ..	<i>amethystinus</i> , Fab.
187 192	Femora black.	
188 191	Pronotum opaque, very finely punctate.	
189	Elytral intervals sublævigatæ, seriate punctures small and distant ... ..	* <i>hartmeyer</i> i, Geb.
190	Elytral intervals sublævigatæ, seriate punctures elongate and scratch-like ... ..	<i>opacicollis</i> , Macl. <i>hunterensis</i> , Blkb.
191	Elytral intervals finely but more distinctly punctate, seriate punctures larger and closer ...	<i>pulcher</i> , Blkb.
192	Pronotum very nitid, more strongly punctate ... ..	<i>cyaneus</i> , n. sp.
193 209	Length less than twice breadth.	
194 198	Size large, 18-19 mm. long.	
195	Eyes very close, elytral colours in vittæ ... ..	<i>grandis</i> , Macl.
196 198	Eyes much more distant, elytra nearly concolorous.	
197	Intervals strongly convex ... ..	<i>proditor</i> , Blkb.
198	Intervals feebly convex, seriate punctures smaller ... ..	<i>major</i> , Blkb.
199 209	Size smaller, 13-16 mm. long.	
200 202	Legs red or piceous.	
201	Colour blue or blue-green, seriate punctures very small ... ..	<i>nigritarsis</i> , Pasc. <i>rufipes</i> , Macl.
202	Colour green, seriate punctures larger ... ..	<i>picipes</i> , Macl. <i>jucundus</i> , Blkb.
203 209	Legs black.	
204 206	Elytra and epipleuræ scantily setose.	
205	Colour metallic-green, pronotum distinctly punctate, elytral punctures blue or purple ...	<i>setosus</i> , Blkb.
206	Colours obscure, pronotum scarcely evidently punctate, elytral punctures larger ... ..	<i>nobilis</i> , Blkb.
207 209	Elytra and epipleuræ not setose.	
208	Elytra purple, pronotum green (or blue), seriate punctures uniform to apex ... ..	<i>rusticus</i> , Blkb.
209	Elytra bronze, pronotum dark-bronze, seriate punctures obsolete near apex ... ..	<i>velutinus</i> , W. S. Macl.

(3) This species has both black and red hairs on the tarsi; the posterior tarsi are rather "nigro-setose," while the anterior and intermediate tarsi are rufo-setose.

## AMARYGMUS.

*Synonymy* :—

1. *A. obtusus*, Pasc. = *A. tristis*, Fab., var.
2. *A. ellipsoides*, Pasc. = *A. anthracinus*, Hope.
3. *A. indigaceus*, Pasc. = *A. picicornis*, Hope.
4. *A. tasmanicus*, Blkb. = *A. alienus*, Blkb. (*curvipes*, Geb.), var. = *A. uniformis*, Blkb. = *A. foveostriatus*, Fairm. = *A. foveoseriatus*, Fairm. = *A. morio*, Fab.
5. *A. tardus*, Blkb. = (?) *A. torridus*, Pasc. = *A. bicolor*, Fab.
6. *A. rutilipes*, Blkb. = *A. minutus*, Pasc.
7. *A. maurulus*, Pasc. = (?) *A. pusillus*, Pasc.

The last-named in each case has the priority.

*A. tristis*, Fab. This name has been generally accepted in our museums for the very common black species found over the whole coastal region of New South Wales and Queensland. In the northern part of New South Wales and in South Queensland I have taken a purple variety, while further north there is a second variety with greenish elytra and rather larger elytral punctures, but otherwise identical with the Sydney insect. A specimen of *obtusum*, Pasc., sent by Mr. Blair agrees with the purple variety. I can only regret that he did not send an authentic specimen of *tristis*, Fab., but I find no mention of this type amongst his notes.

*A. anthracinus*, Hope, from Port Essington. The locality is not given in the description, which omission led Blackburn into the assumption that it was an Adelaide insect, hence a black variety of *purpureus*, Germ. Mr. Blair writes that *A. ellipsoides*, Pasc. = *A. anthracinus*, Hope. There is, however, just a shade of doubt as to whether *A. semissis*, Pasc., is not intended, since evidently *semissis* and *ellipsoides* are extremely close, and while specimens of both these species have been sent me, certainly in one case the name *ellipsoides* has been attached to a specimen—the common Sydney species—which I take to be *semissis*, Pasc. Both these species were described by Pascoe in the same paper and on the same page, and, while evidently allied, the following distinctions are made by the author.

*A. semissis*.

- (1) Elytra black.
- (2) Eyes moderately appropriate.
- (3) Form broader and less convex.
- (4) Habitat: Kiama (N.S.W.).

*A. ellipsoides*.

- (1) Greenish-black.
- (2) Eyes not approximate.
- (3) More elliptic.
- (4) Queensland.

Of these the only definite character, since the colour distinction is slight, is (2), and I find this clearly demonstrated in specimens sent.

*Cnodulon picicorne*, Hope = *A. indigaceus*, Pasc. Mr. Blair writes: "Hope's type is rather smashed up, and appears to be a little longer than Pascoe's, but I think there can be no doubt as to the identity of the two. Pascoe's bears locality Sydney, while Hope's has none—only three of his types bear locality indications in Hope's writing on the name label."

*A. uniformis*, Blkb., Mr. Blair writes, "is either very near or conspecific with *A. foveoseriatus*, Fairm., from Duke of York Island, though the latter is a dark greenish-black colour." This is the colour given by Blackburn for *uniformis* in his note under the description; moreover, the fauna of Duke of York Island is typically a Queensland fauna, from many experiences in other species.

*A. tasmanicus*, Blkb., was stated by Blackburn to be a variety of *uniformis*. Gebien places it in the new catalogue as a distinct species. The locality (Tasmania) requires confirmation, as, so far, only a single mutilated specimen (the type) is known, and is probably explained by the well-known possibility of error in labels, as is shown in the case of *C. setosus*, Blkb.

*A. alienus*, Blkb. (*curvipes*, nov. nom., Geb.), Mr. Blair writes, "is, I think, identical with specimens labelled as *costatus*, H. Deyr (? M.S.), from New Guinea. How they got down to Victoria is beyond me. [Probably another erratic label.—H. J. C.] This specimen differs [from *uniformis*] in its blackish-green instead of bronzy-green colour, and in the punctures of the median series being much larger and further apart than the rest. The latter character is present in *uniformis*, but to a less degree, and these two may be conspecific." It is very probable that *alienus* is thus only a variety of *foveoseriatus*, Fairm.; at any rate, *alienus* is *nom præocc.* by Pascoe for a Ceylon species.

*A. bicolor*, Fab. Mr. Blair writes: "Very near *torridus*, Pasc. The elytra are scarcely so nitid as in specimen sent; the punctures, especially on the declivity, are fewer but more elongate, with a tendency to run together in pairs. Instead of being concolorous with the elytra, they have a tarnished appearance as in *tardus*, Blkb. The legs and under-side are of a darker red, as they are in some specimens of our series. *Tardus*, Blkb., is, in my opinion, probably identical with *bicolor*, Fab. The type is a little larger, under-side and legs still darker, and the number of punctures on the inner series is distinctly larger than in the others; the tendency to form

dashes is also present, and the peculiar colouration of the punctures is the same; the general colour of the elytra is brownish, like that of the thorax of *torridus*, Pasc. Our series of *torridus* contains eight examples—Cape York (1), Torres Strait (1), Murray Island (3), Port Moresby (1), Rockhampton (1), Northern Australia (1)—which hardly differ except in the depth of the red of legs and under-side (almost black in some), while the types of *bicolor* and *tardus* differ from them in the colour of the large punctures on the elytra and their tendency to form dashes; the differences between these, as indicated, are very slight and doubtfully specific." From the above, and from the specimen sent, I should say that *tardus*, Blkb. = *bicolor*, Fab., and that *torridus*, Pasc., is a variety of the same species, having reddish legs and under-side, with the foveæ concolorous with the elytra. The name of Pascoe's species should be retained for this distinct variety.

*A. minutus*, Pasc. Mr. Waterhouse very kindly compared the types, and writes: "*=rutilipes*, Blkb., which is like yours. Type of *minutus* is a little smaller, and I fancy the punctuation is a trifle finer, but they seem to be the same species."

*A. maurulus*, Pasc. A specimen sent agrees exactly with specimens I had determined from the Illawarra, New South Wales, as *pusillus*, Pasc., and there is little to distinguish these species in their respective descriptions, both from the same locality, except a slight difference in colour and size, *maurulus* having the elytra "dark blue-black" and length 3 to 3½ lines, while in *pusillus* Pascoe says "elytra nearly opaque, brownish-black," length 2¾ lines.

*A. frenchi*, Blkb., Mr. Blair writes, "seems to be another such erratic (as *uniformis* and *alienus*). It is somewhat variable, but we have many specimens from New Guinea, Gilolo, Ternate, Obi Islands. There are also other allied forms in this region, and these all seem to be more at home there than amongst the Victorian fauna." Certainly amongst the many hundreds of specimens examined and captured from every Australian State I have never met with it, so that again its locality requires confirmation.

#### SUPPLEMENTARY NOTES ON AMARYGMINÆ.

*Amarygmus (Erotylus) morio*, Fab. In a later communication Mr. K. G. Blair writes: "I have discovered another type of Fabricius; the specimen was apart from the others in the Banks Collection, and had been quite overlooked by me. *E. morio* is identical with the specimen sent from Murray Island, and specimens from New Guinea have also been

received. If you refer to Fabricius' description of *morio*, it does not appear to agree with the specimen:—'Antennæ filiformes, atræ. Thorax nitidus, ater, lævis, elytra atra punctata striata.' As a matter of fact the type was a dull-black, with hardly a glimmer of metallic lustre, but it seemed to me so like in structure to the insect sent that I thought I would try the effect of a little soap and water. The effect was marvellous, and the thorax and elytra, when washed, show as bright a colour as a modern specimen. The antennæ (two joints on one side, three on the other) I dare not wash, but they show distinct signs of red, and I have no doubt would be as red as they should be if cleaned. This shows that the creature must have been in its present dirty condition when it came into Fabricius' hands, and that it is not a change due to the accumulation of years." Mr. Blair's specimen sent, as compared with this, is, in my opinion, one of the many varieties of the species named *uniformis*, Blkb. From the typical North Queensland form it differs only in (1) the more green-bronze colour of upper-surface, (2) the slightly larger seriate-punctures of elytra, with more irregularity in its striation. This would make *uniformis*, Blkb., and its synonyms in my table give place to *A. morio*, Fab., as the earliest name. The name has been unaccountably omitted from the catalogues, e.g., Gemminger and Harold, Masters, Junk.

Table of AMARYGMUS (Australian species).

Species marked \* not personally examined by the author.

Numbers in the columns as in *Chalcopterus* table, *supra*.

1	58	Pronotum black.	
2	28	Elytra black (or so dark as to be indistinguishable from black).	
3	25	Elytra striate.	
4	16	Upper-surface more or less nitid.	
5		Size large, 12 mm. long ... ..	<i>tristis</i> , Fab. Purplish, var. <i>obtusus</i> , Pasc.
6	16	Size smaller, 4-9 mm. long.	
7		Length greater than twice breadth	<i>minutus</i> , Pasc. <i>rutilipes</i> , Blkb.
8	16	Length less than twice breadth.	
9	13	Elytral intervals strongly convex.	
10		Form wide and convex, surface very nitid ... ..	<i>carbo</i> , n. sp.
11	16	Form less wide.	
12		Sides of pronotum widely arcuate	<i>perplexus</i> , Blkb.
13		Sides of pronotum nearly straight (narrowed in front) ... ..	<i>pinguis</i> , Blkb.
14	16	Intervals very lightly convex.	
15		Eyes approximate ... ..	<i>semissis</i> , Pasc.

16	Eyes not approximate ... ..	<i>anthracinus</i> , Hope
17	25 Upper-surface opaque.	<i>ellipsoides</i> , Pasc.
18	Form very wide and convex, hind tibiæ curved ... ..	<i>sphaeroides</i> , n. sp.
19	25 Form less wide and convex, hind tibiæ straight.	
20	22 Pronotum nearly smooth.	
21	Size larger, seriate punctures smaller, antennæ dark-piceous ...	<i>striatus</i> , Macl.
22	Size smaller, seriate punctures larger, antennæ paler ... ..	<i>pusillus</i> , Pasc. <i>maurulus</i> , Pasc.
23	25 Pronotum rugose.	
24	Length equal to twice breadth, anterior angles produced and acute ... ..	<i>rugaticollis</i> , Blkb.
25	Length less than twice breadth, anterior angles not produced, rectangular ... ..	<i>aborigine</i> , n. sp.
26	28 Elytra seriate-punctate.	
27	Seriate punctures large, eyes widely distant, abdomen finely punctate	<i>stolidus</i> , Blkb.
28	Seriate punctures smaller, eyes approximate, abdomen strongly punctate ... ..	<i>lilliputanus</i> , Blkb.
29	47 Elytra obscurely coloured (dark-green, blue, or purple).	
30	38 Elytra striate.	
31	35 Striæ deep, intervals lightly punctate.	
32	34 Legs dark.	
33	Length greater than twice breadth	<i>diaperoides</i> , Blkb
34	Length equal to twice breadth (larger than preceding) ... ..	<i>queenslandicus</i> , Blkb.
35	Legs red, length less than twice breadth ... ..	<i>tibialis</i> , n. sp.
36	38 Striæ lightly impressed.	
37	Form widely ovate and convex, tibiæ ferruginous ... ..	<i>corpulentus</i> , n. sp.
38	Form much narrower, tibiæ black	<i>foveolatus</i> , Macl.
39	47 Elytra seriate-punctate.	
40	Legs dark, seriate punctures foveiform ... ..	<i>porosus</i> , Blkb.
41	47 Legs red.	
42	Form widely ovate (length less than twice breadth) ... ..	<i>convexus</i> , Pasc.
43	47 Form much narrower (length equal to twice breadth).	
44	46 Colour subopaque, seriate punctures small.	
45	Eyes subapproximate ... ..	<i>convexiusculus</i> , Macl.
46	Eyes not approximate ... ..	<i>tarsalis</i> , Pasc.
47	Colour very nitid, seriate punctures large ... ..	<i>lindensis</i> , Blkb.
48	58 Elytra brightly coloured or metallic.	
49	Finely striate, under-side red ...	<i>rufescens</i> , n. sp.
50	58 Elytra seriate-punctate.	

51	55	Antennæ black, or nearly so.	
52		Sides of prothorax arcuate ... ..	<i>cupido</i> , Pasc.
53	58	Sides of prothorax nearly straight.	
54		Colour variegated, seriate punctures unequal in size, tarsi fulvo-setose ... ..	<i>suavis</i> , Blkb.
55		Colour almost uniform, purple-bronze, seriate punctures equal, tarsi nigro-setose ... ..	<i>kershawi</i> , n. sp.
56	58	Antennæ red or testaceous.	
57		Elytra variegated ... ..	<i>ruficornis</i> , Blkb.
58		Elytra uniform blue ... ..	<i>pivicornis</i> , Hope <i>indigaceus</i> , Pasc.
59	76	Pronotum brightly coloured or metallic.	
60	70	Elytra striate.	
61	65	Legs dark.	
62	64	Intervals of elytra convex.	
63		Intervals punctate, legs pitchy-brown ... ..	<i>frenchi</i> , Blkb.
64		Intervals sublævigate, legs steel-blue ... ..	<i>tyrrhenus</i> , Pasc.
65		Intervals flat (minutely punctate, legs black) ... ..	<i>tropicus</i> , n. sp.
66	70	Legs red (femora yellow in <i>femoratus</i> ).	
67		Intervals of elytra strongly convex	<i>termitophilus</i> , Lea
68	70	Intervals feebly convex.	
69		Prothorax long and narrow, elytra violet-purple and obovate ... ..	<i>femoratus</i> , n. sp.
70		Prothorax transverse, arcuately narrowed, elytra blue and oval...	<i>hackeri</i> , n. sp.
71	73	Elytra substriate (striæ irregular).	
72		Elongate and parallel, elytra variegated ... ..	<i>æger</i> , Blkb.
73		Elongate ovate, elytra coppery-purple, punctures gold ... ..	<i>geminatus</i> , n. sp.
74	76	Elytra seriate-punctate, pronotum green.	
75		Antennæ and legs black ... ..	<i>kurandæ</i> , n. sp.
76		Antennæ and legs red ... ..	<i>exilis</i> , Pasc.
77	85	Pronotum and elytra bronze (species large, 10-12 mm. long).	
78	80	Elytra striate.	
79		Intervals more or less convex ... ..	<i>A. morio</i> , Fab. <i>A. foveo-seriatus</i> , Fairm. <i>A. foveo-striatus</i> , Fairm. var. * <i>A. uniformis</i> , Blkb. var. * <i>A. tasmanicus</i> , Blkb. <i>A. curvipes</i> , Geb. ( <i>A. alienus</i> , Blkb., <i>nom-præocc.</i> )
80		Intervals quite flat, seriate punctures oblong ... ..	<i>pascoei</i> , Geb. ( <i>nom-præocc. cupreus</i> , Pasc.)
81	84	Elytra seriate-punctate, punctures foveiform.	
82	84	Punctures purple (except in <i>torridus</i> ).	





*Head* impunctate, eyes widely separated (space equal to the length of the second and third antennal joints combined), antennæ joint three little longer than fourth, joints seventh to eleventh successively wider. *Prothorax* subtruncate in front and behind (very little produced at the anterior angles or at the centre of base), anterior angles obtuse but well defined, posterior obtuse and rounded; twice as wide as long, sides rounded on hinder half, more straightly converging anteriorly, disc impunctate. *Scutellum* widely triangular, smooth. *Elytra* very convex both ways, wider than prothorax; striate punctate, with eight well-marked striæ on each elytron, continuous throughout, the punctures in striæ small, rather close, and half-concealed, intervals wide and flat on middle, slightly raised at sides and apparently impunctate. Under-side smooth, hind tibiæ strongly curved (more so than in *A. convexus*, Pasc.). *Dimensions*—8 × 5 mm.

*Hab.*—Queensland: Mackay.

Two specimens, given me by Mr. French, are very like a small *A. pascoei*, Geb. (*Euripera cuprea*, Pasc.) in form and sculpture, but differ in size, colour, tarsi, and the strongly curved hind tibiæ *inter alia*. In form like *A. ellipsoides*, Pasc. (the elytra of which are not striate). Types in the author's collection.

#### AMARYGMUS ABORIGINE, n. sp.

Elongate-ovate, opaque-black above, slightly nitid beneath, antennæ and legs piceous-red, tarsi pale-red.

*Head* finely punctate, eyes distant the length of basal joint of antennæ; antennæ, all joints short, gradually enlarging to the apex, third slightly longer than fourth, eleventh nearly round. *Prothorax* moderately convex, truncate at apex, sinuate at base, not much wider at base than at apex, sides evenly rounded, anterior angles subrectangular, posterior obtuse, margins not evident from above; finely but very strongly and closely rugose-punctate (almost as in *A. rugaticollis*, Blkb.); smooth medial line distinct throughout and terminated behind in a foveate depression, with two smaller depressions limiting the central basal extension. *Scutellum* large, triangular, closely punctate. *Elytra* narrowly ovate, wider than prothorax at base, striate-punctate, intervals lightly convex, more strongly so at sides and apex, punctures in striæ very small, half-concealed and not very close; intervals microscopically punctate, with a velvety appearance; sternum and *abdomen* densely punctate; hind tibiæ slightly bent. *Dimensions*—4.5 × 2.5 mm.

*Hab.*—Queensland: Mackay.

A single specimen, kindly given me some time ago by Mr. C. French. Two specimens also in Mr. Lea's collection. Most nearly allied to a *rugaticollis*, Blkb., but differs from that species in (1) still more opaque upper-surface, (2) shorter and stouter antennæ, (3) smaller and more concealed seriate punctures in the well-defined striæ, (4) shorter and more oval form. Type in the author's collection.

AMARYGMUS TIBIALIS, n. sp.

Ovate convex; head, pronotum, and under-side nitid-black, antennæ and legs piceous-red, tarsi pale-red, elytra dark purple-violet, moderately nitid, the suture black.

*Head* and *pronotum* closely and finely punctate, eyes distant the length of two basal joints of antennæ, antennæ short and stout, gradually enlarging to the apex, all joints short and closely fitted, two apical-joints widely oval. *Prothorax* wide and short, base much wider (but not twice as wide) than apex, subtruncate at base and apex, sides widely rounded. *Elytra* wider than prothorax at base, ovate, striate-punctate, punctures in striæ rather large and close (distant the diameter of one), intervals feebly convex and apparently impunctate. *Metasternum* irregularly, coarsely punctate. *Abdomen* smooth, all tibîæ curved. *Dimensions*—4.2 × 2.5 mm.

*Hab.*—North Queensland: Cooktown.

A single specimen (male) in my collection was labelled by me *A. diaperoides*, Blkb., until I was able to compare it with authentic specimens of that species from the Northern Territory of South Australia. The true *A. diaperoides*, Blkb., is wider, darker in colour, with the striations more deeply marked, the punctures therein smaller and more concealed, and its intervals evidently punctate. *A. tibialis* is also near *A. rufescens* (above), but the colour differences are very marked, while the latter has much smaller seriate punctures and evidently punctate intervals. The curved tibîæ alone distinguish *tibialis* from both allies, though this may be sexual. Type in the author's collection.

AMARYGMUS CORPULENTUS, n. sp.

Widely ovate, very convex; head and pronotum dull-black, elytra dull blue-green, under-side moderately nitid-black, legs and antennæ reddish-brown, femora darker, tarsi flavo-setose.

*Head* and *pronotum* microscopically punctate, elypeal suture straight and deep, eyes separated by a distance equal to the length of basal joint of antenna, the latter with joint three half as long again as fourth, fourth to sixth equal, seventh to eleventh successively enlarged and obconic,

eleventh widely oval. *Prothorax*  $2 \times 4\frac{1}{2}$  mm., truncate in front, a little sinuate at base, arcuately widened from apex to base, anterior angles acute, posterior obtuse, disc without foveæ or middle line. *Elytra* of same width at base as prothorax, widening in the middle, very convex in each direction, seriate-punctate, with eight lines of oval punctures, larger and more widely placed than in *A. convexus*, Pasc., intervals flat, minutely but visibly punctate. *Abdomen* faintly striolate, tibiæ a little curved. *Dimensions*—9-10  $\times$  6-6 $\frac{1}{2}$  mm.

*Hab.*—Queensland: Carrawal and Mount Chalmers.

Three specimens, including the sexes, received from Mr. C. French, were at first determined by the author as *A. ellipsoides*, Pasc. One specimen was sent to the British Museum, and compared with the type by Mr. C. O. Waterhouse, who very courteously took this trouble and writes that *ellipsoides* is "blackier, longer, with the interstices of elytra convex; yours is very near *A. convexus*, Pasc., but the antennæ are shorter and a trifle more slender, the elytra duller and more green, the punctuation visible; there is none in *convexus*." *A. convexus*, Pasc., is a very common South Queensland species, smaller, more nitid, the legs brighter-red, and quite distinct from the above.

#### AMARYGMUS RUFESCENS, n. sp.

Ovate convex; head and pronotum nitid-black (with the labrum and front and hind margins of pronotum reddish), antennæ, legs, and under-side red, tarsi pale-red, elytra brilliant-purple, with coppery reflections at the suture and green on the postero-lateral margins.

*Head* closely punctate, eyes distant the length of the first two antennal joints; antennæ short and thin, scarcely enlarged apically, joint three little longer than fourth, fourth to seventh short and linear, eighth to eleventh narrowly oval. *Prothorax* apex truncate, base slightly sinuate, sides lightly arcuate, base about one and a half times as wide as apex; finely, not very closely, punctate, without a medial line. *Scutellum* large, triangular, metallic. *Elytra* rather wider than prothorax, ovate; finely striate-punctate; striæ shallow but distinct, the punctures therein small, placed at a distance equal to the diameter of one, intervals flat (feebly convex at the apex and sides) and minutely punctate. Under-side rather closely striolate. *Dimensions*—5  $\times$  2.8 mm.

*Hab.*—North-western Australia.

A single specimen in the Macleay Museum is differentiated from its nearest ally *A. diaperoides*, Blkb. (of which I have seen two specimens from the South Australian

Museum, with Mr. Blackburn's label attached) by the following:—(1) Colour brighter and more brilliant (blue-black in *A. diaperoides*), (2) under-side and legs red (black in *A. diaperoides*), (3) striæ less deep, with the intervals flat. Type in the Macleay Museum.

AMARYGMUS KERSHAWI, n. sp.

Elliptic, moderately convex nitid; head, prothorax, legs, antennæ, and tarsi black (also tarsal clothing black), under-side black with metallic reflections; elytra purple-bronze with the suture and sides green.

*Head* finely distinctly punctate, eyes distant the length of basal joint of antennæ, antennæ with apical-joints enlarged, third shorter than fourth and fifth combined, third to seventh cylindrical, eighth to tenth shorter and thicker, eleventh oval. *Prothorax* ( $2 \times 3.5$  mm.), with apex produced slightly in the middle and strongly so at the acute anterior angles, base slightly sinuate, not much wider than apex, sides with basal half nearly straight, anterior half arcuate; finely, distinctly punctate, with indications of a smooth medial line; lateral margins evident from above. *Scutellum* black, triangular smooth. *Elytra* considerably wider than prothorax, oval, seriate-punctate, the punctures in series fairly large (as in *C. variabilis*, Bless.), placed at a distance wider than the diameter of one, intervals flat and strongly punctate, these punctures much smaller than the seriate. Under-side finely striolate. *Dimensions*— $7.5 \times 4$  mm.

*Hab.*—New South Wales.

A single specimen in the Melbourne Museum is differentiated from all described species by its combination of black prothorax, legs, antennæ, and tarsi, and bright varicoloured elytra. The strongly produced anterior angles and nearly straight sides of prothorax (shaped somewhat like *Chalcopterus purpureus*, Germ.) are distinctive. The elytra are sculptured somewhat as in *C. variabilis*, Bless. Type in the Melbourne Museum.

AMARYGMUS TROPICUS, n. sp.

Rather narrowly ovate, moderately convex, nitid; head, underside, and legs black, antennæ and tarsi obscurely reddish, pronotum coppery-black (black with metallic reflections), elytra more or less purple, with some green towards the sides.

*Head* minutely punctate, eyes distant the length of third antennal joint; antennæ short and fine, scarcely thickened apically, third not much longer than fourth, fourth to tenth

short and subequal, eleventh longer and oval. *Prothorax* rather narrow, slightly convex, subtruncate at base and apex, sides nearly straight, not much narrowed in front, anterior angles a little produced, acute, posterior obtuse, disc finely punctate, without medial line. *Elytra* elongate-ovate, wider than prothorax, striate-punctate, the striæ shallow with small punctures closely placed, the intervals flat and minutely punctate. *Abdomen* distinctly striolate. *Dimensions*—6.7 × 3.3.5 mm.

*Hab.*—North Queensland: Coen River, Cape York, and Cooktown.

Six specimens from Cairns and Cape York (A. Lea), Coen River (Melbourne Museum), and Cooktown are near *A. tarsalis*, Pasc., and *A. suavis*, Blkb., but the species differs from the former of these in its metallic and evidently punctured pronotum, from the latter in the sculpture of the elytra (*inter alia*), the striæ, though fine and shallow, being evident, while the punctures are much smaller and closer than in *A. suavis*. Type in the author's collection.

#### AMARYGMUS FEMORATUS, n. sp.

Elongate, narrowly obovate, convex above and below a beautiful violet-blue nitid, femora bright-yellow, tibiæ, antennæ, and tarsi piceous-brown.

*Head* coarsely punctate, eyes widely distant, the length of the first two antennal joints; antennæ long, enlarged towards apex, third little longer than fourth, third to sixth cylindrical, eighth to eleventh oval. *Prothorax* very long and convex, nearly as long as wide, greatest width in front of middle, truncate in front and behind, sides gradually widening from base to beyond the half-way, then rather rapidly but arcuately converging, all angles obtuse, the anterior much depressed, lateral margins evident from above; densely and strongly punctate, without medial line. *Scutellum* large, triangular, and punctate. *Elytra* convex, of same width as prothorax at base, gradually widening to behind the middle; finely striate-punctate, the striæ shallow, the punctures small, round, and very close (separated by a distance less than the diameter of one), intervals feebly convex and closely, minutely punctate. *Prosternum* distinctly, sides of *mesosternum* coarsely, *metasternum* and *abdomen* finely punctate. *Dimensions*—6 × 2.5 mm.

*Hab.*—North Queensland (or Port Darwin?) (F. Dodd).

Mr. Dodd sent this, with other insects, shortly after his return from Port Darwin, but as no locality was affixed I am unable to state the habitat more precisely. An extraordinarily shaped insect, easily distinguished from all

described species by its unusually long subcylindric prothorax, its narrow obovate elytra, brilliant-blue colour above and below, and its pale-yellow femora. Another genus may possibly be found necessary for this species. Type in the author's collection.

AMARYGMUS HACKERI, n. sp.

Convex and ovate; head blue, pronotum brilliant-purple, elytra violet-purple, with metallic reflections on suture and sides, under-side black, legs piceous-red, antennæ and tarsi clear-red.

*Head* very finely punctate, eyes approximate, distant little more than the second antennal joint, antennæ long, considerably enlarged towards apex, joint three nearly as long as fourth and fifth combined, seventh to tenth rather widely subconical, eleventh pear shaped. *Prothorax* very convex, straight in front, slightly sinuate behind, twice as wide at base as at apex, all angles obtuse but (with the margins) not evident from above, sides evenly arcuately converging forwards. *Scutellum* small, triangular, metallic-green. *Elytra* very little wider than prothorax, moderately convex, striate-punctate, the punctures in striæ very small, close and half-concealed, intervals feebly convex, except towards sides, and impunctate; under-side minutely striolate, basal joint of hind tarsi as long as the rest combined. *Dimensions*—6.5 × 3 mm.

*Hab.*—Queensland: Coen River, Cape York (H. Hacker).

A single specimen, given me some time ago by Mr. Hacker, is distinguished from its nearest ally, *A. tropicus* (*supra*), by its brilliant colour, approximate eyes, and impunctate intervals *inter alia*. Type in the author's collection.

AMARYGMUS GEMMATUS, n. sp.

Elongate-ovate, very convex; head and prothorax metallic-green, the latter purplish towards base, elytra bright coppery-purple, the punctures a brilliant-gold; under-side brownish-black nitid, legs black above, tibiæ reddish beneath, antennæ and tarsi castaneous.

*Head* densely, finely punctate, eyes very distant (about the length of the first two antennal joints), antennæ short and thickened apically, all joints unusually short, third scarcely longer than fourth, eighth to tenth subtriangular, eleventh bluntly ovate and larger than preceding. *Prothorax* convex, not much wider at base than at apex, sinuate at apex and base, the apex produced in the middle and at the anterior angles, these widely acute (about 80°), posterior angles obtuse, sides evenly, not widely, rounded, densely and finely rugose-punctate, without any medial line; lateral margins not

visible from above. *Scutellum* triangular with curvilinear sides, minutely punctate. *Elytra* very convex, of same width as prothorax at base, slightly wider behind shoulders, then gradually narrowed to the rounded apex: each elytron with eight rows of large, sometimes elongate, punctures, placed closely (the intervals between two less than the diameter of a puncture), the first series and the last forming continuous striæ, the others only striate at the apical declivity, intervals convex (strongly so at the apex). *Abdomen* smooth except for a few round punctures between the posterior coxæ, a similar cluster of punctures on the *metasternum* between the intermediate coxæ continued along the anterior margin of *metasternum*; intermediate and hind tibiæ curved. *Dimensions*—7 × 3 mm.

*Hab.*—North Queensland: Kuranda (F. Dodd).

A single specimen sent by Mr. Dodd is the most beautiful *Amarygmus* known to me, the golden subfoveate punctures on the coppery-purple elytra and the metallic pronotum alone distinguishing it from all described species. In form it is very like a small *A. variolaris*, Pasc., but the punctures are smaller and more elongate with quite a different arrangement, while the prothorax is more convex and rounded at the sides than in Pascoe's species. The elytra are scarcely striate, except on the first and the external row, also at the apex, where the striæ are deep and well marked, but towards the middle the deep and close punctures, narrow, and sometimes confluent or elongate, give much the impression of striation, but the spaces between the punctures are distinctly on the same level with the raised interstices. Type in the author's collection.

AMARYGMUS KURANDÆ, n. sp.

Moderately convex, ovate; head, antennæ, legs, and under-side black, the last nitid, pronotum green, elytra obscure blue-green with purple reflections moderately nitid, tarsal clothing red.

*Head* densely, finely punctate, eyes separated by a distance equal in length of third antennal joint, antennæ not extending to middle of body, joint three shorter than fourth and fifth combined, apical-joints slightly enlarged, fourth to sixth equal and short, seventh to tenth subconical, eleventh longer and ovoid. *Prothorax* slightly produced in the middle and angles at apex, very slightly lobate at base, sides evenly and arcuately converging forwards, not twice as wide at base as at apex, anterior angles rectangular, posterior obtuse, margins evident from above; closely and very finely punctate and without any medial line. *Scutellum* smooth, metallic, and triangular. *Elytra* oval, moderately convex (as in *A.*



*foveolatus*, Macl.), seriate-punctate, seriate punctures rather large and oval (smaller than in *A. foveolatus*), those in the three middle rows larger than those in the others, all punctures becoming smaller towards apex, intervals flat, minutely and closely punctate; under-side (including sternum) smooth or faintly striolate. *Dimensions*—8.8.5 × 3.5-4.5 mm.

*Hab.*—Queensland: Kuranda (F. Dodd); Yandilla (F. A. Gore).

Two specimens sent by Mr. Dodd, and one in the Brisbane Museum (from Yandilla) are distinguished from other described species by the combination of coloured prothorax, black antennæ, legs and tarsi, with seriate-punctate elytra. Nearest *A. foveolatus*, Macl., it is readily distinguished by the different-coloured thorax and their produced anterior angles. Types in the author's collection.

TRICHAMARYGMUS, n. gen. (*Amarygminarum*).

Whole upper-surface thickly clothed with long and upright white hairs, the legs and under-surface with shorter hair, mandibles truncate at apex, antennæ very long, with joints seven and eight slightly wider than preceding, ninth to eleventh narrower than eighth, the last two subcylindric, fourth to eleventh of nearly equal length, joint three about as long as first and second combined. Elytra coarsely, unevenly punctate, each puncture bearing a long white hair, the punctures of different size and arranged in crowded rows, three or more rows forming irregular series, with convex nitid intervals, the rest as in *Amarygmus*.

TRICHAMARYGMUS PILOSUS, n. sp.

Narrowly ovate; head, prothorax, and scutellum black, antennæ at base piceous, apical-half of antennæ, under-side, legs, and tarsi reddish, elytra a uniform rich violet-purple, nitid, and pilose, tarsi beneath flavo-setose.

*Head* densely, rather coarsely punctate, eyes separated by a distance equal to the length of the basal joint of antennæ, ocular sulcus narrow; antennæ not enlarged at apex. *Prothorax* 2 × 3 mm., very convex, short, truncate at apex, sinuous at base, sides widely rounded, coarsely impressed with setiferous punctures, larger than those on the head, without a central line. *Scutellum* triangular and finely punctate. *Elytra* ovate convex (somewhat cylindrical), nearly twice as long as wide, intervals between series of rows minutely but densely punctate; epipleuræ coarsely punctate. *Abdomen* coarsely and sparsely punctate; *pro-* and *meta-sternum* more closely and finely punctured, especially on the flanks;

posterior tarsi with basal joint nearly as long as the rest combined. *Dimensions*—8.5-10 × 4.4-5 mm.

*Hab.*—Western Australia: Shark Bay.

Two specimens, I think both sexes, sent by that indefatigable enthusiast, Mr. C. French, are so different in clothing and sculpture from all *Chalcopteri* as to require a separate genus. The sculpture may be described as seriate-punctate, but in the place of defined single rows of punctures, there are irregular rows, sometimes three, sometimes four or more confused, but forming series of depressions, so that the intervals are distinctly convex. These punctures are generally large—much larger than in *C. affinis*, Bless.—but become finer at the sides, the apparently smooth intervals, under a strong lens, are seen to be very densely punctate also. Types in the author's collection.